

AMENDMENT NO. 1 NOVEMBER 2015
TO
IS 15885 (PART 1) : 2011 SAFETY OF LAMP CONTROLGEAR

PART 1 GENERAL REQUIREMENTS

(Third cover page, Foreword) — Substitute the following for existing:

‘Annex A to Annex P form an integral part of this standard.’

(Page 5, clause 10.2) — Insert the following new clauses:

10.3 For control gears providing SELV, the accessible conductive parts shall be electrically separated from live parts by at least double or reinforced insulation. There shall be no connection between the output circuit and the body or the protective earthing circuit, if any. Moreover, the construction shall be such that there are no possibilities of any connection between these circuits, either directly or indirectly, through other conductive parts, except by deliberate action (see 10.4).

SELV output circuits shall be electrically separated from earth by at least basic insulation. The expression ‘circuits’ also covers windings of internal transformers (HF and others) of the control gear.

In control gears providing ELV conductive parts are regarded as live parts and shall be insulated accordingly.

Compliance is checked by inspection, relevant insulation tests and measurements (see also Annex M).

10.4 Control gears providing SELV may have accessible conductive parts in the SELV circuit, if the rated output voltage under load does not exceed 25 V r.m.s. or 60 V d.c. ripple free d.c. where the voltage exceeds 25 V r.m.s. or 60 V ripple free d.c., the touch current does not exceed,

- a) for a.c. 0.7 mA (peak);
- b) for d.c. 2.0 mA;
- c) the no-load output does not exceed 35 V peak or 60 V ripple free d.c.

NOTE — The limits given are based on IS 9409.

Compliance is checked by measuring the output voltage when steady conditions are established, the control gear being connected to rated supply voltage and rated frequency. For the test under load the control gear is loaded with a resistance which would give rated output (current or wattage, respectively) at rated output voltage. For control gears with more than one supply voltage, the requirements are applicable for each of the rated supply voltages.

The touch current is checked by measurement in accordance with Annex G from IS 10322 (Part 1).

For control gears providing SELV with rated output voltages or currents exceeding the values given above at least one of the conductive parts in the SELV circuit shall be insulated by insulation capable of withstanding a test voltage of 500 V r.m.s. for 1 min.

Accessible conductive parts separated by double or reinforced insulation, for example, live parts and the body or primary and secondary circuits, may be bridged (conductive bridged) by resistors or Y2 capacitors provided they consists of at least two separate components of the same rated value (resistance or capacitance) and are rated for the total working voltage and whose impedance is unlikely to change significantly during the individual lifetime of the control gear. In addition, accessible conductive parts separated by double or reinforced insulation from live parts, as above, may be bridged by a single Y1 capacitor.

Y1 or Y2 capacitors shall comply with relevant requirements of ISQC 302400 and if resistors are used they shall comply with the requirements of test in 14.1 of IS 616.’

Price Group 5

Amendment No. 1 to IS 15885 (Part 1) : 2011

(Page 27, Annex H) — Insert the following new Annexes:

ANNEX J

(Foreword)

**ADDITIONAL REQUIREMENTS FOR BUILT-IN MAGNETIC BALLASTS
WITH DOUBLE OR REINFORCED INSULATION**

The requirements are under consideration.

ANNEX K

(Foreword)

SCHEDULE OF MORE ONEROUS REQUIREMENTS

The requirements are under consideration.

ANNEX L

(Foreword)

CONFORMITY TESTING DURING MANUFACTURE

The requirements are under consideration.

ANNEX M

(Foreword and Clause 10.3)

PARTICULAR ADDITIONAL REQUIREMENTS FOR CONTROL GEARS PROVIDING SELV

M-1 GENERAL

This annex applies to control gears for use as SELV supply for luminaries. It consists of the relevant requirements of IEC 61558-1 : 2005 according to 4.2 of that standard, for associated transformers and IS/IEC 61558-2-6 for safety isolating transformers. In addition, for control gears containing HF-transformers, relevant requirements of IEC 61558-2-16 also apply.

M-2 TERMS AND DEFINITIONS

M-2.1 Short-Circuit Proof Control Gear

Control gear not exceeding the specified temperature limits when overloaded or short-circuited, and which continues to meet all requirements of this standard after removal of the overload or short-circuit.

M-2.2 Non-Inherently Short-Circuit Proof Control Gear

Short-circuit proof control gear equipped with a protective device which opens the input circuit or the output circuit, or reduces the current in the input circuit or the output circuit when the control gear is overloaded or short-circuited and which continues to meet all requirements of this standard after the removal of the overload or short circuit and, if possible, after resetting or replacing of the protective device

NOTES

1. Examples of protective devices are fuses, overload releases, thermal fuses, thermal links, thermal cut-outs and PTC resistors, automatic break-off mechanical devices and fuses as printed circuits on printed circuit boards.
2. In case of protection by a device which can neither be replaced nor reset, the wording 'continue to meet all requirements of this standard after removal of the overload' does not imply that the control gear continues to operate.

M-2.3 Inherently Short-Circuit Proof Control Gear

Short-circuit proof control gear not equipped with a device to protect the control gear and in case of overload or short circuit, by construction, does not exceed the specified temperature limits and continues to operate and meet all the requirements of this standard after the removal of the overload or short circuit.

M-2.4 Fail-Safe Control Gear

Control gear which, under abnormal conditions, permanently fails to function by the interruption of the input circuit but presents no danger to the user or surroundings.

NOTE — Any non-resetting and non-replaceable protective device may be used.

M-2.5 Non Short-Circuit Proof Control Gear

Control gears intended to be protected against excessive temperature by means of a protective device not provided with the control gear, and which continues to meet all the requirements of this standard after the removal of the overload or short circuit and resetting of the protective device

M-2.6 Separating HF Transformer

Component part of the control gear for which the rated frequency is much higher than the supply frequency.

NOTE — This HF-transformer can be the separation between the input and output circuit(s) in the control gear.

M-3 CLASSIFICATION

Control gears are classified as follows:

a) According to their protection against electric shock Independent control gears are classified as follows:

- 1) Class I control gears;
- 2) Class II control gears; and
- 3) Class III control gears.

b) According to the short-circuit protection or protection against abnormal use Control gears are classified as follows:

- 1) Non-inherently short-circuit proof control gear;
- 2) Inherently short-circuit proof control gear;
- 3) Fail-safe control gear; and
- 4) Non-short-circuit proof control gear.

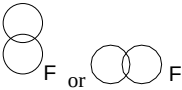
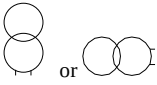
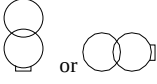
Amendment No. 1 to IS 15885 (Part 1) : 2011

M-4 MARKING

When symbols are used, they shall be as follows:

Table 7 Symbols for Marking, if Marking is Used

(Clause M-4)

Sl No.	Symbol	Item
(1)	(2)	(3)
i)	PRI	Input
ii)	SEC	Output
iii)	==	Direct current
iv)	N	Neutral
v)	~	Single phase
vi)		Fuse link (add symbol for time-current characteristic)
vii)	t_a	Rated maximum ambient temperature
viii)		Frame or core terminal
ix)		Fail-safe lamp controlgear
x)		Non-short-circuit proof lamp controlgear
xi)		Short-circuit proof lamp controlgear (inherently or non-inherently)
xii)		Safety isolating lamp controlgear (SELV lamp controlgear)

M-5 PROTECTION AGAINST ELECTRIC SHOCK

Control gears providing SELV shall, in addition to the requirements given in **10.3** and **10.4**, comply with relevant requirements specified in **9.2** of IEC 61558-1 : 2005.

Compliance is checked by the test described in **9.2** of IEC 61558-1 : 2005.

M-6 HEATING

Control gear providing SELV and their supports or mounting surfaces shall not attain excessive temperature in normal use.

Compliance is checked by the relevant tests of **14** of IEC 61558-1 : 2005, but with the following adjustments:

- Clause **14.1**, 10th paragraph:
Replace 10 percent by 6 percent;
- Substitute Table 1 by the following:

Table 8 Values of Temperatures in Normal Use
(Clause M-6)

Sl No. (1)	Parts (2)	Temperature (3)
i)	Case of capacitor:	
	– if t_c is marked	t_c ^{c)}
	– if t_c is not marked	50
ii)	Windings (with bobbins and laminations have contact), if the winding insulation is:	
	– of class A material ^{a)}	100
	– of class E material	115
	– of class B material	120
	– of class F material	140
	– of class H material	165
	– of other material ^{b)}	–
	a) The material classification is in accordance with IEC 60085 or IS 13730 (Part 0/Sec 1) or equivalent standard.	
	b) If material other than those specified in IS 1271 under Class A, E, B, F and H are used, they shall withstand the tests of 14.3 in IEC 61558-1 : 2005.	
	c) The maximum temperature of capacitor, bridging the separation transformer, shall be lower than 50 °C if t_c is not marked, in case t_c is marked, the maximum temperature is t_c . For other components, see Table 12.1 of IS 10322 (Part 1)	

c) Clause **14.1**, third and second paragraph from the end:

Substitute the reference to ‘**18.3**’ by ‘**M-8.3**’ of this annex.

d) Clause **14.3**, first paragraph:

Substitute the references to ‘**14.2**, **19.12.3** and **26.3**’ by ‘**M-6**’ of this annex, and

e) Clause **14.3.4**, first paragraph:

Substitute the references to ‘**18.1**, **18.2**, **18.3**’ and ‘**18.4**’ by ‘**M-8**’ of this annex.

For moulded-in transformers specially prepared, samples provided with thermocouples shall be submitted for testing.

M-7 SHORT-CIRCUIT AND OVERLOAD PROTECTION

Control gears providing SELV shall not become unsafe due to short-circuits and over-loads which may occur in normal use.

Compliance is checked by the relevant tests of **15** of IEC 61558-1 : 2005, but with the following adjustments:

a) Clause **15.1**, second paragraph:

Replace the reference to ‘**14.1**’ by ‘**M-6**’ of this annex

Amendment No. 1 to IS 15885 (Part 1) : 2011

b) Clause **15.1**, second paragraph after Table 3:

Replace the reference to “Clause 9” to “Clause 10” of this standard

c) Clause **15.1**, third paragraph after Table 3:

Replace the reference to “**18.3**” by “M-8.3” of this annex

d) Clause **15.3.4**:

This sub clause is not applicable.

e) Clause **15.5.1**, third paragraph:

Replace the reference to “**14.1**” by “M-6” of this annex.

M-8 INSULATION RESISTANCE AND ELECTRIC STRENGTH

M-8.1 General

The insulation resistance and the electric strength of control gears providing SELV shall be adequate.

Compliance is checked by the tests of **11** and **12** and **M-8.2** and **M-8.3**, which are made immediately after the test of **11** in the humidity or in the room in which the specimen was brought to the prescribed temperature, after reassembly of those parts which may have been removed.

M-8.2 Insulation Resistance

Insulation resistance is measured with a d.c. voltage of approximately 500 V applied, the measurement being made 1 min after application of the voltage. The insulation resistance shall be not less than that shown below.

Table 9 Values of Insulation Resistances

(Clause M-8.2)

Sl. No.	Insulation to be Tested	Insulation resistance MΩ
(1)	(2)	(3)
i)	Between input circuits and output circuits	5
ii)	Between metal part of Class II convertors which are separated from live parts by basic insulation only and the body	5
iii)	Between metal foil in contact with the inner and outer surfaces of enclosures of insulating material	2

M-8.3 Electric Strength

Immediately after the test of **M-8.2**, the insulation is subjected for 1 min to a voltage of substantially sine-wave form at rated mains frequency. The value of the test voltage and the points of application are given below.

NOTE — In Annex N, test voltages are given for control gear intended to be used in luminaries where a higher availability is called by one of the Parts 5 of IS 10322.

**Table 10 Dielectric Strength Test Voltages for Controlgears
Intended for Use in Impulse Withstand Category II**

(Clause M-8.3)

Sl No	Application of Dielectric Strength Test Voltage ^b	Working Voltage V ^a				
		< 50	≤ 150	> 150 ≤ 300	600	1 000
(1)	(2)	(3)				
i)	Between live parts of input circuits and live parts of output circuits (double or reinforced insulation)	500	2 000	3 000	4 200	5 000
	Over basic or supplementary insulation between:	250	1 000	1 500	2 100	2 500
	a) live parts having different polarity as in normal use, i.e. not under fault condition. Test not applicable within the same winding;	—	—	—	—	—
	b) live parts and the body, if intended to be connected to protective earth;	—	—	—	—	—
ii)	c) accessible conductive parts and a metal rod of the same diameter as the flexible cable or cord (or metallic foil wrapped round the cord) inserted inside inlet bushing, cord guards and anchorage, and the like;	—	—	—	—	—
	d) live parts and an intermediate conductive part;	—	—	—	—	—
	e) intermediate conductive parts and the body;	—	—	—	—	—
	f) each input circuit and all other input circuits connected together.	—	—	—	—	—
iii)	Over reinforced insulation between the body and live parts	500	2 000	3 000	4 200	5 000
a)	Values of dielectric strength test voltage for intermediate values of working voltage are found by interpolation between tabulated values, except for the span 150 V to 300 V.					
b)	For the construction according to 19.12.3 b) and 26.2.4.1 of IEC 61558-1 : 2005 test b), the voltage is multiplied by the factor of 1.25. For the construction according to 26.2.4.2 of IEC 61558-1 : 2005, the voltage is multiplied by the factor 1.35.					

M-9 CONSTRUCTION

M-9.1 The construction of transformers used in control gears providing SELV shall be such that they comply with all relevant parts specified in **19.12** of IEC 61558-1 : 2005, and **19** of IS/IEC 61558-2-6 with the exception of **19.1.6** for control gears other than independent.

If, however, insulated winding wires are used for control gear with an input voltage of up to 300 V, the dielectric strength test voltage is limited to 3 kV for raw material.

In addition, for separating HF transformers, the relevant requirements of **19** of IEC 61558-2-16 apply with the exceptions for separating HF transformers other than independent given in **19.1.3.7**.

Compliance is checked by inspection and measurement.

M-10 COMPONENTS

Components used as protective devices in control gears providing SELV shall comply with relevant requirements given in **20.6, 20.7, 20.8, 20.9, 20.10** and **20.11** of IEC 61558-1 : 2005.

Amendment No. 1 to IS 15885 (Part 1) : 2011

Compliance is checked by inspection and the relevant test described in IEC 61558-1.

M-11 CREEPAGE DISTANCES, CLEARANCES AND DISTANCES THROUGH INSULATION

Creepage distances, clearances and distances through insulation shall be not less than the values shown in Table 3 and Table given below. In addition transformers which form an integral part of a control gear providing SELV shall comply with relevant requirements and tests given in 26 of IEC 61558-1 : 2005.

Distances through insulation within opto-couplers complying with the requirements for double or reinforced insulation according to IS 13252 (Part 1) are not measured, if the individual insulation is adequately sealed and if air is excluded between individual layers of the material. Otherwise, the distance through insulation between the input and output of the opto-coupler shall be at least 0.4 mm. In both cases, the tests according to **M.8** shall apply.

NOTE Further information regarding creepage distance, clearances and distances through insulation can be found in Annexes A, C, D, M, N and P of IEC 61558-1 : 2005.

Table 11 Creepage Distances (cr), Clearances (cl) and Distances Through Insulation (dti) for the Impulse Withstand Category II Material Group III a (175 < CTI < 400)

Pollution Degree 2; All dimensions in millimetres.

(Clause M-11)

SI No.	Type of Insulation		Measurement		Working Voltages ^{c), j)} V							
			Through Winding Enamel ^{b)}	Other Than Through Winding Enamel	>25 to <50		100		150		250	
					cl	cr	cl	cr	cl	cr	cl	cr
i)	Insulation between input and output circuits (basic insulation)	a) Creepage distances and clearances between live parts of input circuits and live parts of output circuits-	x	x	0.2	1.2	0.5	1.4	1.5	1.6	2.5	2.6
		-Reduced values ^{a), b)}			0.2	1.2	0.2	1.4	0.5	1.6	1.2	2.6
					-	0.18	-	0.25	-	0.3	-	0.57
		b) Distance through insulation between input or output circuits and an earthed metal screen	x	x	dti		dti		dti		dti	
		c) Distances through insulation between input and output circuits	x	x	No requirements of thickness							
ii)	between input and output circuits (double or reinforced insulation)	a) Creepage distances and clearances between live parts of input circuits and live parts of output circuits-	x	x	cl	cr	cl	cr	cl	cr	cl	cr
		0.5			1.4	1.5	2.0	3.0	3.0	4.7	5.0	
		-Reduced values ^{a), b)}			0.5	1.4	0.5	2.0	1.5	3.0	2.5	5.0
					-	0.25	-	0.4	-	0.7	-	1.4
		b) Distance through insulation between input or output circuit and an earthed metal screen ^{a), c)}	x	x	dti		dti		dti		dti	
iii)	Insulation between adjacent input circuits or Insulation between adjacent output circuits ^{d)}											
		Creepage distances and clearances	x	x	cl	cr	cl	cr	cl	cr	cl	cr
		0.2			1.2	0.2	1.4	0.2	1.6	0.4	2.6	
		-Reduced values ^{a), b)}			-	0.18	-	0.25	-	0.3	-	0.57

Table 11 (Concluded)

Sl No.	Type of Insulation		Measurement		Working Voltages ^{c), j)} V							
					>25 to <50		100		150		250	
			Through Winding Enamel ^{b)}	Other Than Through Winding Enamel	cl-cr		cl-cr		cl-cr		cl-cr	
iv)	Creepage distances and clearances between terminals for the connection of external cables and cords excluding those between terminals for input and for output circuits		x	x	3.0		3.6		4.0		5.4	
v)	Basic or supplementary Insulation ^{b)}	Where it is required by the standard and for example between a) live parts of different polarity b) live parts and the body if intended to be connected to protective earth c) accessible conductive parts and a metal rod of the same diameter as the flexible cable or cord (or metal foil wrapped around the cord) inserted inside inlet bushing, anchorage and the like. d) live parts and an intermediate conductive part e) an intermediate conductive part and the body - Reduced values ^{a), b)}	x	x	cl	cr	cl	cr	cl	cr	cl	cr
					0.2	1.2	0.5	1.4	1.5	1.6	2.5	2.6
					0.2	1.2	0.2	1.4	0.5	1.6	1.2	2.5
vi)	Reinforced or double insulation	between the body and live parts or where it is required by the standard (excluding insulation between input and output windings)	x	x	0.5	1.4	1.5	2.0	3.0	3.0	4.7	5.0
		between the body and live parts of output circuit, if protected by additional provisions against transient voltages - Reduced values ^{a), b)}	x	x	0.2	1.4	0.2	2.0	0.5	3.0	1.2	5.0
					-	0.25	-	0.4	-	0.7	-	1.4
vii)	Distance Through insulation	Basic ^{g)}	x	x	No requirement of Thickness							
		Supplementary ^{g)}	x	x	dti		dti		dti		dti	
		Reinforced (excluding insulation between input and output circuits)	x	x	0.1 ^{e)} (0.05) ^{f)}		0.15 ^{e)} (0.05) ^{f)}		0.25 ^{e)} (0.08) ^{f)}		0.42 ^{e)} (0.13) ^{f)}	

a) See 26.2 of IEC 61558-1 : 2005 (for a)) and 26.3 of IEC 61558-1 : 2005 (for b)), requirements for pollution degree 1 (P1) and Table F.4 of IS 15382 Part 1.

b) Measurement through winding wire enamel if at least one winding is constructed with wire complying with at least Grade 1 of IS 13730 (Part 0/Sec 1).

c) Values of creepage distances and clearances and distances through insulation may be found for intermediate values of working voltages by interpolation between the values in the table. No values are required for working voltages below 25 V as the voltage test of Table 10 is considered sufficient.

d) These values do not apply:

- inside each winding or between groups of windings intended to be permanently connected together, provided that the termination of windings to be connected together are at the same potential;
- where the working voltage does not exceed 300 V and the winding wires comply at least with Grade 1 of IS 13730 (Part 0/Sec 1), if only the windings are intended to be connected in a series or parallel arrangement (for example, input voltage 110/220 V).

e) For solid insulation

f) In case of insulation consisting of thin sheets.

g) When double insulation is required between input and output windings, the total thickness through insulation shall be the same as shown in box ii) c) whether measured directly or via metals parts, with the exception of insulated wires (see 19.12 of IEC 61558-1 : 2005).

h) The breakdown of the basic insulation or supplementary insulation gives a contribution of its thickness to the clearance.

j) For working voltages exceeding 250 V (see IEC 61558-1 : 2005).

NOTES

- When a numeric figure is replaced by a dash in a column of the table it means that no value is required.
- The minimum values of clearance in this table are applicable in air up to 2 000 m above sea level.
- In case of insulation between SELV circuits and other than SELV circuits, the values of this box have to be replaced by the one of box vi and vii (according to 19.1 of IEC 61558-1 : 2005).

ANNEX N

(Clause 1)

**DIELECTRIC STRENGTH TEST VOLTAGES FOR CONTROL GEAR
INTENDED FOR THE USE IN IMPULSE WITHSTAND CATEGORY III**

The requirements are under consideration.

ANNEX O

(Clause 1)

**REQUIREMENTS FOR INSULATION MATERIALS USED FOR DOUBLE OR
REINFORCED INSULATION**

The requirements are under consideration.

ANNEX P

(Clause 1)

**ADDITIONAL REQUIREMENTS FOR BUILT-IN ELECTRONIC CONTROL GEAR WITH
DOUBLE OR REINFORCED INSULATION**

The requirements are under consideration.